DOCUMENT RESUME

ED 369 266 FL 021 986

AUTHOR Pickering, Michael
TITLE How a Bilingual Child Understands Being Bilingual.
PUB DATE [93]
NOTE 21p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Bilingualism; Case Studies; *Childhood Attitudes; Cognitive Development; Early Childhood Education; English; Finnish; Foreign Countries; *Language Acquisition; *Language Attitudes; *Metalinguistics; Uncommonly Taught Languages; *Young Children
IDENTIFIERS Finland

ABSTRACT

This case study examined the development of linguistics concepts and the idea of bilingualism in a young girl of Finnish- and English-speaking parents over a 3.5 year period between the child's first and sixth birthday. Through observational methods, it was found that representative instances (preconcepts) of language were attained by age 2, first using lexis as the signifier, and subsequently phonological signifiers. Through a series of delicately graded steps, a concept of the family as bilingual had developed by the time the child reached age 3. Some conception of the domain of use of each language was also present by age 5. (Contains 10 references.) (MDM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 369 266

HOW A BILINGUAL CHILD UNDERSTANDS BEING BILINGUAL

Michael Pickering
Department of English, University of Turku,
20500 Turku Finland

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Michael Pickering

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

FL021986

BEST COPY AVAILABLE

HOW A BILINGUAL CHILD UNDERSTANDS BEING BILINGUAL

Michael Pickering, University of Turku.

Abstract The evidence examined in the present article was gathered from the conversation of a Finnish and English speaking child, over a period of about 3½ years, from age 1,10;11 to age 5,6;11. It was found that representative instances (preconcepts) of language were attained very early, first using lexis as the signifier, and subsequently perhaps using a phonological signifier. Through a series of delicately graded steps, a concept of the family as bilingual had developed by the end of the third year. Some conception of the domain of use of each language was also present by the end of the fifth year. The data is analysed in the framework of an equilibrium theory of spontaneous concept development (Charlesworth, 1969; cf also Piaget, 1951; Barrs, 1992) in which concepts emerge as a result of cognitive conflict.

Keywords bilingualism child cognition concept metalinguistic

Approach to a case study of the development of linguistic concepts

This is an observational, single case study. The chief practical difficulty perhaps with observational studies is their interpretation (experimental designs both enable and predispose towards a particular interpretation). Observation does however have the great advantage that *any* suitable explanatory hypothesis can be used interpretatively after the study has been completed: thus, the data was gathered on this case without any theoretical interpretation in mind. It is true that observational studies may themselves be guided by covert hypotheses, but, apart from the safe presumption that children do in fact develop linguistic concepts, no such covert hypothesis operated in this study. We noted all utterances in either language (Finnish or English) which appeared to refer, implicitly or explicitly, to what a normally educated person understands as "language". Such utterances are usually characterised as *metalinguistic* (whether implicitly or explicitly: cf Yavas (1988)) and they can readily be identified without theoretical presuppositions.

The basis of spontaneous concept formation

We shall show in the following sections that the data from the study will support two complementary hypotheses on conceptual development.

The first hypothesis is that spontaneous concept formation is initiated in the course of individual development by confrontation with *conflicting information,* and that its genesis is sometimes accompanied by an affective experience, for example of *surprise*. This hypothesis (see e.g. Charlesworth, 1969) is still of interest because, inter alia, it is consistent with the current model of consciousness as a "global workspace". (Barrs, 1988). Barrs does not directly mention contradictory input, but

he does indicate our "tendency to pay more attention to problems that demand more novel solutions" (Barrs, 1992).

Charlesworth (1969) formulated the hypothesis as follows:

> [Conflict models of development] have the following essentials: perturbation upsets a cognitive equilibrium, conflict results, endogenous and learned processes are set in motion to restore the equilibrium, the processes are affective, but as a result the organism's cognitive status is changed..." (p.286)

and:

> Surprise has generally been viewed as involving a mismatch between an "internal" expectancy and an external event, but this may be an unnecessarily limiting view. It could well be a mismatch between two internal elements." (p.302)

Charlesworth's **perturbation** and **mismatch** are theoretically more specific, but otherwise appear to be similar to Barrs' **novelty**, and Charlesworth's **equilibrium** is, reductively, Barrs' **solution.**

Example of affective response to a contradiction

At (#1) 1,11;25 our subject, Anna, evidently finds it amusing that father says *tulip* and mother *kukka* (=flower) for the same object: a flower in a vase. (Note: the # symbol followed by a number identifies items in the data). Later, at (#2) 2,6;20 she confides laughingly to father that her Finnish babyminder's family says *kaivo* for the real object which father calls *pump*. Two other remarks similar to #2 occurred (without the affective response) where the word pairs were *fork/haarukkka* and *teltta/tent*. Amusement, like surprise, is an affective response which indicates awareness of incongruity, that is, Charlesworth's contrary-to-expectation property. The same is true of embarassment, which was noted in a later response (#17).

The second hypothesis is that children's conceptual development begins with what Piaget (1951 (1962)) called "preconcepts".

Preconcepts are representative instances of a particular object which stand for (we would say: signify) all such objects.

Piaget in 1951 (1962:242) wrote:

> ...one of the elements is centred as a prototype or representative sample of the set, the schema of this set [which], instead of achieving the abstract state that characterises a concept, continues to be linked to the representation of this typical individual, i.e. to an image.

In the present study, the notion of preconcept or representative instance includes symbols (images) whose signifiers are lexical or phonological items (specific words or sounds) representing, for the child, the language as a whole. But we do not postulate a common referent ('language') shared by child and adult. We orient exclusively to the child's current awareness. The adult concept of language is not seen as the *goal* of the child's conceptual development, although, given normal input, it is nevertheless expected to be the ultimate outcome of that development.

We consider that representative instances play a major part in both child and adult thinking, the difference being that adults tend to possess a systematised concept as well as representative instances. The central difference between a representative instance or preconcept and a systematised concept is that the representative instance reveals nothing about the boundaries of the concept, which become apparent only when viewed from the vantage point of other concepts within a system.
This should be borne in mind when considering our conclusion on what concept is finally attained by the child in this study.

Earliest bilingual attributions: the first step

The instances already mentioned of explicit attribution to different speakers of L1 and L2 words (*tulip/kukka, kaivo/pump*) must of course have been singled out by the child from the

numerous cross-language synonyms which she had heard used in reference to real objects. It is important to grasp that the **reasons** why these two word pairs were singled out is of secondary importance here (but see below under section heading "Language and person: the concept attained"). What is of primary importance is that the need for **representative instances** of L1 and L2 words was satisfied by two pairwise contrasts of Anna's three most "significant others" at this time in her life: father-mother, and father-babyminder, with respect to L2 - L1. From the point of view of completed conceptual development in this particular area (mutually interrelated concepts in a system), these representative instances are **preconceptual**, since as yet there is no concept of a general class of L1 words or L2 words, nor of words as a class of object. At this point the content of the child's knowledge which is now the context for her further conceptual development can be glossed as follows: "Father says tulip, fork, tent, mother says kukka, haarukka, teltta".

Further support for the view that Anna develops preconceptual ideas of language during the second and third years occurs while on holiday in England. At (#3) 2,2;26 she explains to her English-speaking great-aunt that her English doll uses *butterfly* and not *perhonen*, and at (#4) 2,5;9 she asks father what her mother says and what her Finnish babyminder says for *butterfly*. She then explains that she says *butterfly* to her great-aunt, and her great-aunt says *butterfly* to her when she reads the "mousy book" to her. What tends to confirm that *butterfly* signifies a preconcept here is the fact that no butterfly is pictured or mentioned in the "mousy book": thus the word in this context is a prototypical word of English and a metalinguistic sign, not the name of an insect.

We have discussed above the first utterances in which Anna shows a reaction to cross-language synonymy. We would regard her reaction as evidence that a concept of two distinct languages is beginning to be formed, or, equivalently, that the attribution of different words (having the same referent) to different speakers is the first and very concrete step in the formation of

a concept of bilingualism. In the older person, the successor of this concept will ultimately involve the attribution of whole linguistic systems to different groups of speakers, and the conceptual separation of languages, as entities, from their speakers, as entities.

Language and person: the second step

Development of the concept of a relation between languages and persons appears to proceed from a one-one to a many-one correspondence, while the more complex concept of language ordering (which is someone's "first" or "better" language) begins to show up only towards the end of the period studied. The absence of even a limited reversibility in the conceptualisation of language at this stage is consistent with the absence of any trace of an awareness of her own or other people's serial "switching" behaviour (alternating between the two languages) or of two-way "translation" (no awareness either of the general equivalence of the two languages, nor of their vicariant relation, whereby language-and-person in one case is equated with language-and-person in the other case: cf Pickering, 1985). Note that reversibility in the present context presupposes an inclusive class (languages) in which otherwise disparate concepts (Finnish and English) would be regarded as equivalent.

Relating the absence of reversibility to the hypothesis that concepts develop in the presence of conflicting information, we can suppose that the equilibrium state of reversible concepts will only be achieved with regard to "switching" and "translation" when the individual is ready to access - for instance - conflicting information about one's own identity or that of the interlocutor, or evidence that languages differ (globally) yet are mutually substitutable (locally).[1]

Language and domain: the third step

At (#5) 2,7;3 Anna, in Finland at this time, is looking at a picture-story book about London. She observes that the ticket collector on the Underground pictured in the book *talks English* but *Mummy doesn't talk English*. At (#6) 2,7;10 she observes that she has spoken Finnish to father (to whom she does not usually speak Finnish). From these two remarks it is clear that she conceives of each language as associated with just one person. More generally, we can say that she places the languages and persons in one-one correspondence. By now the preconcept of English and Finnish must have given way to a concept which, at the least, identifies each language as a distinct way of speaking; otherwise it would be impossible for the child to use the words *English* and *Finnish* correctly, as she clearly does. But it is impossible to derive from our evidence any idea of what the signifier of these concepts now is. We return to this point below.

Both the above remarks can be interpreted in terms of the conflict hypothesis. The remark at 2,7;10 we suggest expresses the conflict induced by the breach of her **regular practice** of speaking English to father through her **accidental mistake** of speaking Finnish to him. (Later, at (#11) 3,1;21 when father responds to a remark made by the child in Finnish, she replies: *I don't want you. It was in Finnish,* showing that the concept of a regular correspondence between father and English is now established).

The remark at 2,7;3 (#5 - about the ticket collector and mother, see above), appears to reveal a more complicated cognitive conflict. The remark itself refers to the correspondence between language and person, but the conflicting information occurs at another level. This is the level of **domain** of use (Fishman, 1972) of a language (we discuss domain later in a different connection: see section headed "Language and domain: a society-specific problem)

In #5, we suggest, the ticket collector and mummy, are signifiers for the preconcepts (representative instances) not of English and Finnish persons, but of the **domains of use** of English and Finnish. This suggestion is based upon the fundamental fact that #5, like many other explicit metalinguistic remarks we have recorded, are resistent to any explanation in terms merely of the context: for example, the child was not responding to any pertinent question, was not fantasising, telling a story etc. Such remarks lack any motivation, *unless* we assume an intention to convey a personal discovery to the listener. Accordingly, what is thematised in such statements is not the grammatical subject (ticket collector, mummy) but the knowledge which the statements make manifest. Hence the false predications (that the pictured ticket collector **speaks** - although no words are assigned to him in the book - and that mummy **does not speak Finnish** - although in fact she does) are not false from the point of view of the child's intention: the predicates are merely *examples*- and, like the preconcepts which are named by their subjects, are representative, not real. For the child, we would insist, there does exist a functioning distinction between representation and reality which enables her to use fictitious examples exactly the way an adult does. The nature of such a distinction in very young children's play ("A 'mark as false' account of pretense will not work") is discussed in an interesting study of the necessity of illusion by A. L. Leslie (Leslie, 1988: 205,207). (Moreover, this **functioning** distinction between representation and reality clearly does not imply that the child has yet attained a **concept** of either.)

The new preconcept, in our terms then, is the concept of correspondence between language and domain of use: the ticket collector and mummy are representative instances of the domains of use of English and of Finnish respectively. This preconcept is founded upon a distinction which is not the adult reversible distinction between one domain and another (where all domains are

members of an equivalence class), but the irreversible distinction (bound to the present situation) between a pictured domain, England, and a really present domain, Finland. And because "speaking English" has come to represent "being in England", it becomes necessary to say that "Mummy does not speak English", which means that "Mummy is not in England".

The above account is intricate but nevertheless precise. It explains how a particular and unusual input evoked the formulation of a specific metalinguistic idea.

Language and Country: a language-specific mismatch

In the area of language and country correspondences, the lexis of the two languages itself sets a problem for the child. In English, the adjectives referring to language and nationality (*English*) are non-distinct, while in Finnish it is the nouns referring to language and country (*suomi*) which are non-distinct. The noun referring to country is distinct in English (*England*) and the adjective referring to nationality is distinct in Finnish (*suomalainen*).

Thus in each linguistic tradition a different distinction fails to be lexically encoded and has to be discovered afresh by each generation.

At (#7) 2,8;10 Anna remarked in Finnish to mother (about another child) *Sen isikin on suomee. Minun isi ei ole, kun minun isi on vaan englanti.* (Mother: *Niin on.*) *Minun mami on suomee. (Her daddy is Finnish too, my daddy isn't, as my daddy is English.* (Mother: *Yes, he is.*) *My mummy is Finnish.)* But here she used the name of the language *(suomi)*, not the name of the nationality (*suomalainen*). The utterance #5 quoted above may indeed be based upon an identification of "talks English" with "is English". A further phase in the resolution of the linguistic homonymy comes to light at (#8) 3,1;21 when she says to father: *You are in English mummy is in Finnish. You are in English and in Finnish.*

The corresponding utterance in Finnish would have used *suomi*, which is both country and language. Utterance #8 thus appears to express, and only partly to resolve, the informational conflict induced by the lexical semantic difference between the two languages. The first sentence of #8 can be understood to mean **both** that one parent is English, the other Finnish **and** that one parent speaks English, the other Finnish (to the child). The second sentence can be understood to mean that father speaks both languages, or that the parents collectively speak both languages. Separately the two sentences are both true under these interpretations, and thus partly resolve the conflicting lexical information through identifying "is X" with "talks X".

Language and person: the concept attained

At least from 2,7 the concept of a correspondence between a language and a person is attained. It is not entirely clear whether the construction of a one-one correspondence specifically underlies these earliest utterances, because already utterance #8 quoted above seems to indicate a one-many correspondence (one parent, two languages). At all events, there is no evidence so far for the concept of a many-many correspondence which will be required before the full concept of bilingualism or multilingualism is attained. The full concept will require that languages, in general, can be distributed over persons, in general, i.e. that languages and persons can be multiply correlated. Recognising that one parent uses two languages is, at least in Anna's case, a preceding step. Notice that the evidence for multiple correlation was present to the child from the beginning: the data shows unambiguously that what occurred was a step-by-step construction of this correlation, and our analysis shows that each step could have occurred through confrontation with conflicting information.

Again, it must be stressed that we do not know in what the preconcept of language consists - what its content is - at this

phonological patterns by which the languages are most sharply contrasted at this stage in the acquisition of the phonologies. One isolated datum which supports this is that, some weeks after hearing a poem read in Italian, the child implicitly identified an Italian word as a word which belonged to the poem, although this word did not in fact occur in the poem. However, if such representative sounds are the signifiers of the preconcepts of particular languages at this point, then they evidently do not lead to any informational conflict and subsequent concept formation: we have no utterance in which the child refers to Finnish sounds or English sounds as such, notwithstanding that a large collection of her utterances shows metalinguistic awareness of various specific differences between the sounds of English and Finnish (Pickering, 1993). It may be that Anna represents the two languages with a collection of instances, including tulip/kukka (#1) and butterfly/perhonen (#2), and these can be based partly on the segmental contrasts b/p, f/h, where /b/ and /f/ are English sounds which do not occur in Finnish (cf section above headed "The basis of spontaneous concept formation") and which Finnish replaces with /p/ and /h/. Her inability to generalise to language from sets of words in unsurprising when we consider that at this phase of development children do not have a concept of word as a phonological entity and in fact for the most part still confound the word with the object to which it refers. There is ample evidence from studies of metalinguistic development that young children normally confound word and referent, even if bilinguals have sometimes been shown to make the distinction earlier than monolinguals (Tunmer and Myhill, 1984:176 et seq.). In fact, the resolution of the conflict - **two** words, **one** referent - did not occur for Anna until 3,3;26 (Pickering, 1993).

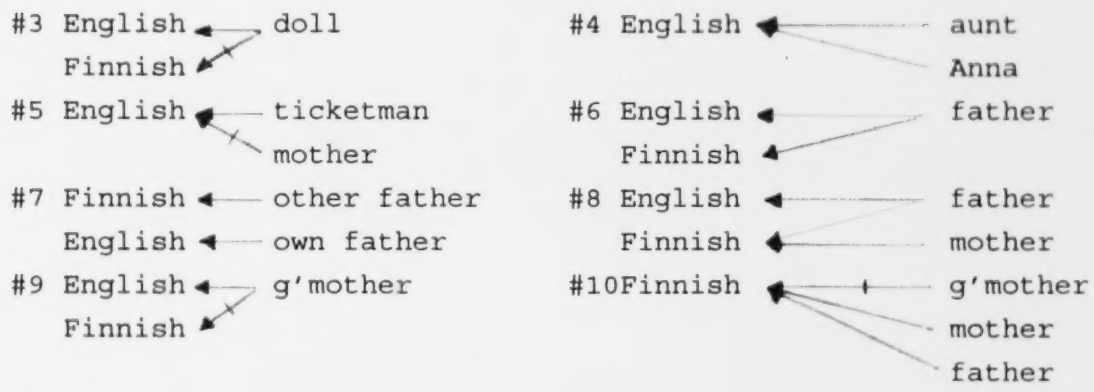
We would conclude this discussion by suggesting that, although bilingual children may have a rich phonological preconceptual foundation for the distinction between their languages (Pickering, 1993), their later concept of "a language" is not constructed on this basis, but on the relation between the

languages and (a group of) speakers. The specialised conceptual work of adult phonologists is to rediscover, and conceptualise on the basis of, the phonological - and probably other - preconcepts which the child "abandons". [2]

Investigation of concept boundaries

Although, ex hypothesi, conceptualisation originates **spontaneously** in conflicting information, the further development of (pre)concepts may depend on **active investigation** to determine whether there is an external mismatch (cf above, section headed "The basis of spontaneous concept formation".) For example, in our case the child tests the idea she has formed that her grandmother speaks English to determine whether she speaks **only** English (i.e. not Finnish as well). At (#9) 2,9;27 she recites a nonsense song to grandmother, and says that it is in Finnish. Her conclusion from this "experiment", which was perhaps intended primarily as a joke, is expressed at (#10) 2,10;11 when she says that her parents can say the name *Moppi* (a dog's pet name) but her English grandmother cannot. Here, *Moppi* is a new signifier for the preconcept of Finnish. A secondary point here is that *Moppi* contains a long consonant, a class of Finnish sounds which English people typically fail to pronounce correctly. We do not know however whether her grandmother had really tried to say this word. The essential step forward at this point is the child's establishing that a person can understand and speak language X but not language Y (English but not Finnish). The concept derived is a one-one correspondence between just one member of each of the respective sets, persons and languages. The establishment of one-one correspondence between another pair of members, specifically, between the other language and another person, occurs, in a restricted sense, at (#11) 3,1;21 when she says to father who responds to a remark she has made in Finnish: *I don't want you. It was in Finnish.* Evidently it is now clear to her that father speaks English (#8) and that, at least in relation to her, does not speak Finnish. The development of the

correspondences may be diagrammed as follows (crossed lines in the diagram denote excluded correspondences):



The following relations are explicitly present in the above:

1. one-one correspondence between language and person (#3,5,6,7,8)
2. many-one correspondence in the direction person-->language (#4,7,10)

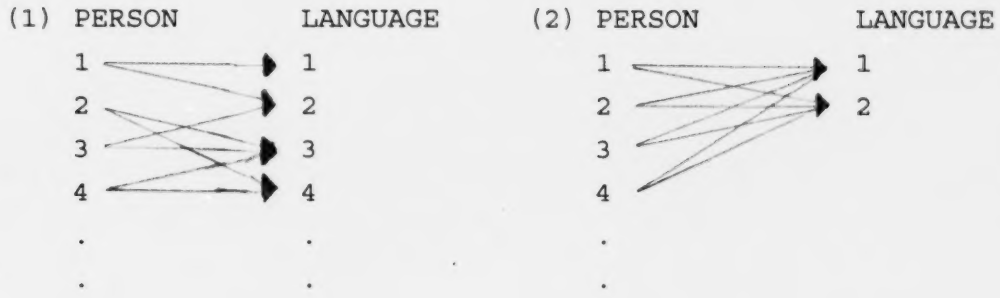
What is of particular interest here is that the concept of bilingualism is still lacking. Bilingualism is the correspondence of two languages to one person, the inverse of 2. above, i.e. a many-one correspondence in the direction person <-- language. Notice however that this correspondence, though not directly present, is implicit in, and, from the adult's but not the child's point of view, can be inferred from #8.

At (#12) 3,3;11 Anna undertakes further testing on Finnish playmates, reporting that they laughed when she spoke to them in English. At (#13) she asks why her mother spoke Finnish to her father. Subsequently, she tests her father's ability to speak Finnish to her (#14), and at (#15) 4,0;6 reaches the conclusion that in the family *we all speak Finnish and English* and that father speaks Finnish *as well as English*. #15 can be diagrammed:

All the separate correspondences from which this multiple correlation is composed were expressed in utterances #3 through #10 explicitly, except the correspondence between mother and English. However, this latter correspondence is present implicitly in #13: the source of the child's utterance is the contrast between mother's implied normal speaking of English to father and the exceptional use of Finnish referred to in the child's question.

The concept which has now emerged is **not** the concept of **individual bilingualism**. Individual bilingualism is a generally incomplete correlation between persons and different pairs of languages. The concept of this relation is in fact explicit in regard to father's (actually imbalanced) bilingualism already in #8. The concept expressed by #15 is that of **societal bilingualism**, a complete correlation between persons and one pair of languages. The completeness of the relationship between language and person conceived at this point should not however be confused with reversibility: the relation is clearly irreversible (bound to the situation). To attain reversibility, the child would need to thematise the language, which almost certainly could only be achieved explicitly through an expression in which the language is grammatical subject and the verb is in the passive ("Finnish/English is spoken by.."). This thematisation would require reversibility, so that the language would be distinguished as an entity on a par with its speakers, e.g. as a member of the equivalence class "human". At the present stage of development, however, there can be little doubt that language is viewed purely as a property of the speaker. The difference between the incomplete correlation of individual bilingualism and the complete correlation of societal bilingualism is exemplified in the well-known sentence pair:
(1) "Everybody in this room speaks two languages" (incomplete correlation: individual bilingualism).
(2) "Two languages are spoken by everybody in this room" (complete correlation: societal bilingualism).

Diagrammatically:



Language and domain of use: a society-specific problem

At (#16) 3,1;26 Anna shows implicit awareness that language is related to domain of use (cf also the earlier reference #5 (2,7;3)). In #16 Anna suggests that in England she should talk English to both her grandmother and her mother. No other expression indicating awareness of domain is recorded until much later, at (#17) 4,8;13 when she says to her father: *We'll talk the other language when we go [to the handicraft centre] because Kimmo and Marko are there*. The explanation for this remark is that Anna finds it embarrassing when her father speaks English to her in the presence of Finnish-speaking people. When in Finland she wants to restrict the domain of English to the family circle. The "embarrassment" which she evidently feels is like "surprise" or "amusement" in being, we believe, an affective response to conflicting information. In the case of embarrassment, the conflicting information derives from two different role-expectations: English speaking expected in her role in the family and Finnish speaking expected in her role at daycare (where she plays with Kimmo and Marko). What is chiefly of interest here is that domain takes precedence over person. Just as in England, she proposes to speak, and does speak, English with mother, so in Finland, whenever the ambience includes father and is generally Finnish-speaking, she proposes that father speaks Finnish.

The wider circumstances impinging on domain awareness are worth mentioning. It was noted at 5,1;19 (not before) that her confidence in English had increased to the extent that she actually proposed to teach some English to her playmates at daycare. Michael Clyne, in his short study of his daughter Joanna's bilingual upbringing, suggests (Clyne, 1987:97) that "it is the lack of stigmatization of community languages other than English...which makes Joanna so confident about the value of her bilingualism". In our study, it was observed that, in addition to Anna's embarrassment at her father's use of English, there was shame at being heard to use English herself. The priority of domain over person is occasionally in evidence much later when she refuses to reply to father in English if a Finnish playmate is present. We would guess that there is a causal relationship between the partial failure of the child's Finnish subculture to accept bilingualism and the very limited development of the concept of bilingualism in the child. There is ample evidence in Clyne's report (pp 94-97) that Joanna developed the concept earlier, more rapidly and more fully than Anna did. Societal, as well as individual, differences may be involved.

There are of course further subdomains of relevance for the child. At (#18) 2,10 she already restricted her games to one language or the other. By (#19) she recognised that a book can be the domain of one language or the other (without yet being able to read either language). At (#20) 3,1;1 songs were seen as the domain of a single language. Later, she would anticipate change of subdomain with an appropriate remark, e.g. at (#21) 5,6;11 (to father): *Let's talk Finnish* and at (#22) 4,9 *Do you know why I'm speaking Finnish to Mummy? Because Jonna-Maarit is coming this afternoon*. These last remarks can also be interpreted as expressing the beginning of the formation of a concept of switching, which may also be the first step towards a concept of the reversibility, or situation-free independence, of the terms in the language-person relation. However, no further development of this or the domain concept occurred in the period studied.

Just one remark made during the period studied indicates an awareness that langages can vary in "strength". At (#23) 4,2;8 Anna observed that English was father's first language, Finnish mother's first language, and (with some hesitation) that Finnish was her own first language. This statement is the first step towards ordering the members of the language-person correspondence set according to degree of competemce, which is another important part of the adult concept of bilingualism.

Conclusion

The concept of her own immediate family as speaking - or more exactly, as having - both English and Finnish, which is the concept finally attained by the child in our study, has the status, not of a **representative instance,** but of a **real instance,** of a bilingual society, from the adult point of view, if we may regard the family as a society on the smallest scale. Thus it is, unlike the preconcept of language on which it is based, a concept of bilingualism which is compatible with the fully-fledged adult concept, and able to form an integral part of it.

References

Barrs, B. J. (1988) A cognitive theory of consciousness. Cambridge: Cambridge University Press.

_____(1992) A global workspace approach to conscious experience. Turku: address to international symposium on Consciousness.

Charlesworth W. R. (1969) The role of surprise in cognitive development. In Elkind and Flavell (eds.) *Studies in Cognitive Development.*

Clyne, M. (1984) "Don't you get bored speaking only English?" R. Steele and T. Threadgold (eds.) *Language Topics Vol I.* Amsterdam: Benjamin.

Fishman, J. (1972) *The Sociology of Language.* Rowley Mass:

Newbury House, 113 et seq.

Johnson Laird, P. N. and Wason, P.C. (1977) A theoretical analysis of insight into a reasoning task. In *Thinking* Cambridge: Cambridge University Press, 151-2.

Leslie, A. M. (1988) The necessity of illusion: perception and thought in infancy. In L. Weiskrantz (ed.) *Thought without language,* Oxford: Clarendon Press, 203.

Piaget, J. (1951(1962)) *Play, dreams and imitation in childhood.* London: Routledge and Kegan Paul, 242

Pickering, M. J. (1985) A non-linguistic theory of translation. In J. Tommola and K. Battarbee (eds.) *CDEF 84.* Turku: Publications of the Department of English.

____ (1993) Concepts of language in a Finnish-English bilingual pre-schooler. Conference paper.

Tunmer W. E. and Myhill M. E. (1984) Metalinguistic Awareness and Bilingualism. In Tunmer W.E., Pratt C. and Herriman M. L. (eds.) *Metalinguistic awareness in children.* Berlin: Springer-Verlag.

Yavas F. (1988) Habilidados metalinguisticas na criança; una visão geral. *Cadernos de Estudos Linguisticos* 14, 39-51.

1. It has been established that, at least in experimental tasks, formal logical thinking in adults is more likely to occur with familiar than with novel content (Johnson-Laird and Wason, 1977). Thus it is at best unlikely, if spontaneous concept formation occurs (Charlesworth's hypothesis) precisely when content is unfamiliar (novel), that the emerging concept in a child would be formal and reversible. In other words, we do not need to invoke the Piagetian view on developmental sequence in cognition in order to explain the constraints on conceptualisation observed in this study.

In Pickering (1985) I proposed a synchronic typology of translation which attempts to show that different conceptions of what translation involves are rooted in regression through several different classical Piagetian stages in the development of cognition. An adequate translation does **not** appear to require "formal operations" in the Piagetian sense; quite the contrary, adequate translation appears to depend upon preformal operations such as "vicariance" (partial substitution) and many-many correspondence (correlation). Nothing in the present study actually conficts with that proposal, but it now seems to me that the relatively small number of translations which can be included in the

"equivalence" genre, where the translation process is in a strict but limited sense reversible, may depend for their status on the familiarity of the translator with the stimulus material.

2. Our earlier work on Anna's phonological awareness shows conclusively that implicit awareness of phonological **features** can precede implicit awareness of **phonemes**. This order is the inverse of human historical development, in which phonemic (alphabetic) writing greatly antedates phonological feature theory, suggesting that the phonological features are less accessible to adult consciousness. Piaget believed that a similar inverse relation holds in the case of mathematical discovery, intuitive topological concepts occurring much later than geometrical concepts in history, but earlier than geometrical concepts in the intellectual development of the individual.